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HUTCHINSON

PRESENT STATUS OF  
ELECTRICITY IN  
MEDICINE

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Rhode Island Med. Society



The Present Status

- OF -

Electricity in Medicine.

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HUTCHINSON.







THE  
PRESENT STATUS  
OF  
Electricity in Medicine,

BEING THE  
*SEMI-ANNUAL ADDRESS*

BEFORE THE  
*Rhode Island Medical Society,*

BY

WILLIAM F. HUTCHINSON, A. M., M. D.,  
" "

Fellow Rhode Island Medical Society;  
Member Minnesota State Medical Society;  
etc., etc.

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PROVIDENCE:

PROVIDENCE PRESS COMPANY, PRINTERS TO THE STATE.

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THE only apology to be offered for adding a single drop to the flood of special monographs now innundating the land, especially in the branch of therapeutics to which I have devoted my sole attention, is a somewhat sincere desire upon the part of my colleagues of the Rhode Island Medical Society, as evidenced by an unanimous vote upon the day of delivery of this address, that it should be published in the Transactions thereof.

Deeming it better that the work should be performed under my own supervision, I have taken the liberty to send it forth in this guise, and trust that, slight as it is, it may convey some item of information to the seeker whose opportunities of finding may have been less than my own.

W. F. H.

175 BROAD STREET,

Providence, August, 1874.

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## ADDRESS.

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GENTLEMEN :—It is my purpose to-day to bring to your notice some facts relative to the status which electricity has assumed in therapeutics, avoiding any historical reminiscences or statements, and speaking only of its recognized and settled effects in the medical treatment of disease. From the very limited time allowed me, scarcely more than a *resumé* of the more important points can be given ; and even these must be touched cursorily, and as rapidly as the case will permit. Very many monographs have recently started out upon their mission of teaching, but are, for the great majority of general practitioners, either unintelligible or useless ; since they refer to instruments only partially understood, treat of a therapeutic force at once subtle, powerful and mysterious, and because it is difficult to convey an idea distinctly which is scarcely yet thoroughly formed, and is without sufficient foundation in facts to warrant the erection of a very elaborate superstructure.

Some few things, however, we do know, and of these I shall endeavor to speak.

Just now, most physicians are fully convinced of the surgical value of electricity in certain cases where knife operations are inadvisable or inadmissable, or where enfeebled vitality imperatively demands conservation of blood and nerve power; but comparatively few are satisfied of its curative influence in non-surgical disease.

Perhaps few instances of its successful use have been brought to their notice; perhaps their own efforts in this line have failed; it may be they have been disgusted by the impudent assertions of charlatans, or, most probably of all, they have never given either thought or attention to the subject. Where they have essayed its application, the erroneous idea has obtained, that sufficient may be learned in the application of this potent remedy from the pamphlet usually accompanying the common form of faradic electric machine, wherein is laid down a series of instructions just how, when and where to use electricity in every conceivable disease. After a few of these ill-directed efforts, with other duties pressing upon him, and noting the absolute barrenness of result, it is not surprising that the busy, tired doctor closes the instrument, and returns to drugs, with a strong commentary upon the wisdom of conservatism in medicine. But, gentlemen, it is not thus that you

can possibly test anything—least of all a force of the laws of which we know very little, and of whose possible effects, nothing. The element we would subjugate is too vast in power, too unmanageable in its might, and too swift in action, to be dismissed so summarily, or to be dismissed at all. For the world moves; and when we chat across the seas by lightning, and use it to destroy life in battle conflict, we may not, in justice to our patients, avoid its use in a beneficent direction, if it can be controlled to relieve pain and cure disease.

But the instruments required for its evolution and control, are costly, numerous, and require considerable skill in handling to permit them to show forth their utmost power, thereby practically limiting their application to a small band of specialists, who will carefully study them in the light of experiment, with selected cases, thus producing the best possible results with a force so slightly known.

Time will, however, change this, and the day will come, I believe, when every practitioner will use some form of electricity as cheaply, surely, and familiarly as he now does his hypodermic syringe.

Dr. Nelligan, in his work, used language which has, it is to be feared, hitherto represented the views of the profession at large too generally upon this subject. He says: "The different forms of electricity may be indifferently applied. And again: "I re-

gard the stimulant action of electricity, so to speak, as its active principle." How small the experience which dictates so dogmatic a statement, thousands of facts in practice and in print, arise to illustrate. Medical electricity is both a science and an art; and it is only where a thorough knowledge of both are combined with a well selected class of cases, with proper instruments and with correct sanitary regulations, that good results can be attained. It is no doubt true that empirics have in many cases succeeded in accomplishing much, but it is only where they do succeed that they are ever heard of, entire silence being strictly observed in the vast army of those who have not been benefited or who have received positive injury at their hands.

#### FORMS OF ELECTRICITY IN MEDICAL USE.

The forms of electricity in medical use are the Franklinic, static or frictional—the Galvanic, continuous, battery or constant current,—and the Faradic, induced, electro-magnetic or coil current. All these names represent but three distinct forms of the agent, acquiring their differences in title at the will of the user. The first is usually produced by what is known as the plate machine, consisting of a glass wheel or cylinder revolving in contact with rubbers, and is the direct result of friction, causing an electrical disturbance of the materials employed, one result of which



is collected upon a conductor, or in a receiver, and then used. It is employed in three ways—by drawing sparks from the affected parts; by general electrization, placing the patient upon an insulated stool and charging him full of electricity, or by immersing him in an insulated bath, through the water of which the fluid passes. It is surprising what simple charging the patient will do in certain diseases, and this without the smallest inconvenience to him whatever. I have known in obstinate cases of *tic douloureux*, the pain completely removed in a few seconds, and the majority of unpleasant sensations dependent upon weak innervation, may be removed by this plan.

The second form of electricity employed is what is variously termed Galvanism—the continuous or constant current, and the battery current. Where used with a *rhetome* it is, singularly enough, called the interrupted continuous current. The essential features of this form of electricity are, that it arises from chemical decomposition, that it is of small intensity, but of considerable quantity, terms to be presently defined, and that its effects are of two kinds, chemical, by what is known as electrolysis, and thermic, as illustrated by the *galvano cantery*. The form of battery evolving this current is of prime importance, it being necessary to have an even flow, easily controlled as to amount, and capable of being produced for a long time without change. Being the result of

chemical action, it follows that the parts of the battery must be frequently renewed, and it is therefore found better in practice to have a great number of cells working slowly, each contributing a small amount to the total, and lasting a long time, than vigorous action by a small number of large size. It must be understood that I now refer to a medical battery only—as for surgical purposes exactly the reverse qualities are demanded. Such an one is found in the Siemens & Halske cell, as arranged by the Galvano Faradic Manufacturing Company, of New York. By the terms intensity and quantity are meant separate qualities or effects of the form of electricity now under consideration, it being the only one capable of evolving both.

The quantity of electricity circulating through a resisting medium, a wire, for example, is directly proportioned to the surface of the galvanic pair or pairs, and to the degree of chemical affinity existing between the different substances composing the battery, while the intensity is dependent upon the number of pairs employed and the size of the wire. This may be illustrated by supposing a pipe of three inches in diameter through which is pouring a current of compressible fluid, filling the tube. Now, so long as there is no change in the diameter of the pipe the fluid remains the same; but if the pipe be reduced one-half, the density or intensity of the current must

be increased in the same ratio, to allow the same amount to pass. It is this increase which is termed intensity. Another parallel may be drawn between the slow motion of the great Rodman cannon shot, with its enormous crushing power, and the velocity of the Minie bullet, with its deep penetration. The cloud and earth currents or lightning are of fearful intensity, but of low quantity, while the galvanic caustic pile has very small intensity, but quantity sufficient to ignite a wire of platina. When the galvanic current is sufficiently weak, there is little or no pain accompanying its use, the only sensation being a gentle warmth between the two poles, gradually extending itself through the entire nervous system, arousing natural action, increasing diminished and augmenting decreased impressibility, until a new state takes the place of the old, until the sick nerves and muscles regain tonicity and health, or are placed in a condition to be favorably acted upon by medicines.

The third form of electricity is known as faradism, induced—electro-magnetism or the coil current—all these terms signifying that form of electricity of which Faraday was the great exponent. It is of very high tension, scarcely any chemical action, and possesses no heating power; but under ordinary circumstances it produces marked contraction of muscle fibre, and a powerful action upon both sensory and

motor nerves. In the instruments usually employed to furnish this form of electricity advantage is taken of the well known Faradic law of induction, to have three differing currents from the same battery. From this law, which states that a primary current passing through a spiral wire induces another in a second spiral surrounding the first of higher tension and moving in a different direction, has arisen a great variety of instruments on both continents, all of which are excellent in their way, only differing in minor points of fineness and evenness of current. For the ideal battery of this class, it is necessary to have a secondary coil of wire of very considerable length; the one I am using daily measuring more than two miles, of great fineness, since the current derived from so large a surface must be more even, of greater intensity and divisible into a greater number of degrees of power, than that from a smaller, ascending and descending the scale, by almost imperceptible stages, thus varying the effects of the application without any sudden shock to the patient. Advantage is here taken of the resisting power of different media, to interpose or intercalate, as it is technically termed, in the circuit, sections of iron wire, columns of water or any other substance the resistance of which is known and can be accurately measured. This appliance upon a battery, is termed a rheostat, and is of incalculable

value in making powerful applications to the nerve centres, where no part of the treatment is ever dreaded except the shock attendant upon the sudden and incautious opening or closing of the circuit, which, by the use of the rheostat is absolutely avoided.

#### VALUE OF ELECTRICITY.

Medical electricity is valuable for two purposes: first as an aid to diagnosis, and second as a method of treatment. In the first instance it is often over-estimated. For example, in examining a patient supposed to be suffering from paralysis, upon detecting a well marked difference in the action of a test current of faradic electricity upon different limbs, we arrive at once at the conclusion, regardless of the patient's own statements, that there is some derangement. But this is by no means sufficient, since grave lesions may exist unrevealed by the faradic current which are promptly shown by the galvanic; or may remain undiscovered by either, only appearing by the light of other symptoms. Only when *all* the clinical facts in a case are carefully considered, with the advantage of a selected class of cases, and in the hands of an expert, can a delicate electric test have any special value. Then, however, it is well nigh final, and has been the means of discovering various im-

postures, as well as of proving the existence of real disease where malingering was claimed.

#### AS A MEANS OF DIAGNOSIS.

In using electricity as a means of diagnosis, it becomes necessary carefully to differentiate between employing a current which shall show the amount of irritability in a muscle, this being a test, and one which shall show only the force of contraction, which is no test at all. When then we find that a muscle has lost electric irritability, it is separated from the influence of the cord by destruction of its nerves, or by structural disease of the cord at the origin of the nerve. The degree of loss or diminution of sensibility to the test may vary, but it varies directly in proportion to either the amount of interference between the cord and muscle, or to the degree of damage done to the cord itself. There are cases in which people frighten themselves into a condition of loss of power from ideal influence, and here, if there is no difference between the muscles of the two sides, you are justified in assuming that the disease is feigned. Dr. Beard has recently attempted to use a powerful faradic current in this way up among the Vermont ghosts, where he went to investigate certain curious phenomena which were making old ladies shiver and young ones grow pale over the entire ghost-story loving



community. He reasoned that if a current was used so strong that no human being could hold the poles without the most violent muscle agitation, and the spirits could handle them quietly, there would be one mark in favor of the media. But the spirits were too cunning for the doctor, and while they announced their readiness to hold the sponges, kept very cautiously far enough away from them in the darkened room to receive no harm, and so the test failed.

This same action of the muscles under electrical stimulus, and irrespective of will, is a valuable differential test between actual structural disease of the spinal cord, and simple impaired nutrition. For, when the contractility of a paralyzed muscle under the applied stimulus remains normal, the normal relationship to the cord is necessarily maintained. The brain may be altered in structure or in function, but the nerve supplying the muscle, together with that portion of the cord from which the nerve is sent forth, must still retain its normal functions. When this contractile response becomes increased, it can only be due to increased vascularity in nerve centres, and if diminished, is due to one of a few causes, not difficult to distinguish between.

If, also, it be found that a certain number of applications are given without any improvement, it is probable that structural change has occurred in the cord and that no treatment can avail; while steady

advance almost certainly marks peripheral in place of central lesion, functional derangement rather than organic disease of the cord. When the nerve function is destroyed between the cord and the muscle in question, by injury or disease, the result is that the muscle has lost its powers through simple disuse, or through actual disease; in the latter instance it is beyond complete restoration, in the former this may be confidently looked for, and a few applications of electricity will determine this point, by present or lost electric response. Again, loss of contractility is sometimes due to a change in muscular tissue occurring primarily; as for instance in certain cases of rheumatic paralysis and muscular palsy, the result of blood poisoning. This form of disease may be very closely diagnosed by observing the differing sensibility of the muscles to the faradic and galvanic currents. Where the contractility is alike to both, it is out of the question that merely functional paralysis exists, there must be central lesion, the former incurable, the latter rapidly yielding to treatment. Lastly, electric contractility is diminished by certain changes in the blood, such as anaemia, chlorosis, and poisoning by opium, conditions surely improved by proper medical treatment.

## DIFFERING EFFECTS IN DIFFERENT PERSONS.

The nervous system, as a whole, is widely different as to its action under electrical stimulus. In one person such degree of power as will scarcely contract the smallest muscle is borne with great difficulty, causing not only violent agitation and considerable pain, but a curious depression of the nervous system from which the subject rallies slowly. In one instance occurring lately, where I wished to apply a very mild faradic current to the throat for the relief of hysterical aphonia, a condition promptly relieved by electrical stimulus, I was compelled to desist after three attempts, on account of this rare and singular effect. The patient, a young lady of exceptional culture and resolute will, knowing that no pain ought to follow such an application, tried her utmost to continue it, but the result was so harmful that it was at once stopped, and change of climate ordered. Such cases are extremely exceptional. In another class, the effect of the currents is not only promptly curative, but actually pleasurable, the gentle stimulus reviving dulled sensation and arousing new action, so that the patient arises from the sitting feeling renewed vigor and capacity for enjoyment. Of course it is necessary carefully to study idiosyncracies of temperament, to be prepared to change the quality

and quantity of current employed, and to recognize early the fact that electricity is only valuable where there is no physiological reason for its avoidance. The day scarcely passes when the specialist is not called upon to apply this agent in cases which would seem absurd were it not for the blind faith professed and shown in its curative virtues ; and the disappointment exhibited by some who are dismissed as unfit subjects is often ludicrous in its expression.

In pursuing a systematic course of electro-therapy, it must be borne in mind that there are certain cases wherein a cure may be confidently and quickly looked for ; as, for instance, in aphonia, hysterical, or dependent upon functional paralysis of one or both vocal chords ; or where nerve pain is the prominent symptom. No one can fully appreciate the magic power of electricity, who has not seen the agony of fifth pair or sciatic neuralgia melt away and vanish before the gentle warmth of the constant current, who has not watched the deep wrinkles of distress smooth down into content, and listened to the heartfelt sigh of relief as the unwelcome pang is dismissed—seemingly exorcised by the power of lightning and almost with its rapidity.

By persistent effort paralysis may be removed, the conductivity of the nerves may so be stimulated and revived as to permit the usual agencies of rest, time and medicine to do their work in curing this dis-

case. Increasing atrophy, the terrible progressive muscular atrophy of the text books, and the essential paralysis of children, where wasting of muscle tissue is a main symptom, may be arrested in its advance, and thus, although as yet powerless to cure, time may be gained for other agencies to be given an opportunity to act.

Through the influence of galvanism upon the vasomotor system, there can be no longer doubt that the arterioles of the cerebral tissue can be stimulated to contract, where they are so distended as to render an apoplectic effusion imminent, and thus avoid one of the most serious accidents that can befall humanity. I have at present a patient in whose eye the retinal arteries can be plainly seen to dilate and contract as the circuit is opened or closed upon the vertex, giving at the time of closure, an immediate relief from the sense of giddiness, which usually causes great annoyance.

Electricity has thus its positive side. But there are many cases where it can do no good, and where its use is attended with positive harm. Like all other forms of treatment this has its limits, not yet sharply defined; and it is only when confined within these limits that it can attain any real diagnostic or therapeutic value whatever. The sooner that the popular idea of universal cure so sedulously fostered by empirics, is lost, and the sooner that means of inves-

tigation are as open in this as in other scientific specialties, so much the more rapidly may those boundaries be widened, as have been the domains of science generally.

#### VITAL EFFECTS OF ELECTRICITY.

The most prominent amongst the clinical effects of electricity are those which, from want of a better term, may fairly be called "vital," since they denote certain changes in organic structure, unexplainable by aught we know of physical cause, and appertaining to that mysterious agent we name vitality. They are manifested in the influence of electric currents over the inherent or acquired property in a structure which normally makes it subject to the will, by which a nerve, for instance, may be aroused as to its own proper function, where inactive, or restrained and quieted when action is excessive, or a muscle may be caused to oscillate from a state of most violent agitation to that of slow and steady alternate contraction and relaxation. The vascularity of the skin may be most powerfully acted upon by either of the three forms of electricity. It is not uncommon to see, in certain forms of paralysis, a bluish tinge upon the tips of the fingers, arising from sluggish action. In many cases this may be removed, and may always be relieved, by the constant current bath; while a



condition nearly approaching vesication may readily be produced by the electric scourge.

#### EFFECTS IN MAL-NUTRITION.

But it is in cases of mal-nutrition that the grand value of the specialty is observed. I have repeatedly seen patients suffering from a general depression of vital tone, in whom no organic disease could be detected, who were fast advancing toward dissolution from no definable cause, arouse into new life and activity under the tonic effects of electricity, and rapidly regain strength and health. Some want of tone in the sympathetic, some lack of vitality in the vaso-motor system must be at the bottom of this condition of things; but, so far as I know, no drug has yet been found which will directly act upon these wonderful ganglia, so as to arouse them and restore their normal powers. One year ago a little girl was placed under my charge by Dr. George Mason, who had been for eight years a subject of the essential atrophic paralysis of infancy, which nearly always affects one limb, and in this case had expended itself upon the left leg. Atrophy, or rather want of symmetrical development, existed to such a degree that there was a difference of twelve inches in the circumferences of the limbs, with, of course, entire loss of motor power on the affected side. Treatment was directed to the sympathetics, as well as to the affected limb,

and the result has been that the difference is reduced to four inches, with prospect of still further improvement. Here, the effect was clearly due to the electrical change in nutrition, and not to mechanical exercise of muscle fibre, as the continuous current was almost always used, and change from a low to about a normal temperature has accompanied development of tissue.

#### THERAPEUTICAL EFFECTS.

The therapeutical effects of electricity next claim our attention. These have been alluded to in describing its diagnostic value, but are worthy of more extended notice. First among them comes its powerful effect upon nutrition, as seen in cases of anaemia—of nervous dyspepsia, of wasting paralysis, and in the discussion of tumors, and notably of dysmenorrhœa. In the first group of cases, usually dependent upon a general lowering of nerve tone from some drain upon the vital functions, it is not enough to put an end to such drain; the vital powers have received a shock from which they are unable to rally unaided, and where the usual routine of stimulants and tonics utterly fails until the sympathetic system is put in condition to be favorably acted upon by them. Here the galvanic current acts like magic, and the result is almost always good. The same effect obtains in the

second class, ordinarily occurring amongst our busy merchants and professional men, whom press of business forbids to be regular at meals, compels to eat hurriedly, and whose tastes become so perverted that noxious pastry and hot drink are preferred to the plainer diet which an enfeebled stomach could more readily care for. In such cases, drugs fail to do their work, because they find no proper assimilative action to begin with, and here again, the effect of the galvanic current is prompt and permanent. In these it is found best to limit the application to the pneumogastries and spinal cord as involving the local stomach nerves most nearly. In the third group, where waste of tissue is combined with loss of motor power, the faradic current is to be employed—and a very striking instance of its effect has just occurred in my practice, in a patient sent me by my friend Dr. Perry. The sufferer, a young lady affected with lateral spinal sclerosis, had been for four years completely paralyzed as to the muscles of the neck, so that the head was as totally beyond her control as if it belonged to another person. They were diminished about one-half in size, were flabby, and altogether useless. As a forlorn hope, Dr. Perry placed her under my care, scarcely looking for any favorable change. The faradic current was applied three times a week for four months, with the comfortable result of entirely restoring the vital tone of

muscular fibre, of doubling the muscles in size, and of giving the girl as perfect will control over her head as she ever possessed. My friend, the doctor, was good enough to speak of the effect as "wonderful."

#### DISCUSSION OF TUMORS.

In the discussion of tumors, this agent may be employed in two or three ways, but always with the continuous current. It is most effective when the mass is benign, as in pelvic cellulitis, cystic or orchitic enlargements of the testicles or in goitre,—these affections having all been successfully treated by electricity. Where the tumor is of a malignant nature, long continued treatment is frequently as efficacious as any form of surgical interference, and may be thoroughly relied upon to arrest development. In these cases, however, there is scarcely anything known, and time may or may not demonstrate the value of electricity over the methods of treatment now in vogue.

Within the past three months several fibroids have been submitted to treatment by galvanism, with highly encouraging results. I have long been doubtful of the necessity of introducing needles into such tumors and attempting dissolution of the mass by powerful galvanic currents employed in this way, since

the great density of the tissues precludes more than a small portion thereof being affected at once, and since, in my hands at least, abscesses have formed between the needles as the sole effect of such treatment. Two fibroids have been treated ineffectually by galvano-puncture, which afterwards yielded to and were removed by the process I am about to refer to, which may be called external electrolysis. One other, which was transferred to my charge seven weeks since by Dr. Clarence T. Gardner, an old anaemic uterine interstitial, almost as hard as bone, has, in that time, been reduced more than one-third by actual measurement, and the patient otherwise improved in health. The mode of application in this case will serve to illustrate the process usually adopted. An uterine electrode, carefully insulated up to within one and a half inches of a bulbous point, is introduced into the uterus as far as is possible, and connected with the negative pole of an intensity galvanic battery. The positive pole is attached to a sponge covered disk, which is placed under the sacrum, and a current strong enough to produce a distinct pricking sensation passed between them for at least thirty minutes, daily. When the negative pole is withdrawn from the cavity of the uterus it is always thickly coated with oxide, which is harmless, the metal employed being iron. The result is slow chemical decomposition of the fibroid and energetic stimulation

of the absorbents, whereby the mass is gradually renewed. It is true that the process is long and slow; but, in the great majority of cases, patients prefer this to the more rapid action of the needles, even were such action effectual, which I doubt. In the case above referred to, no other operative interference is possible, save the hypodermic use of ergotine, and even the most enthusiastic supporters of that plan of treatment, confess its barrenness of result when the tumor is not partially at least myomatous. In fact, the employment of galvano-puncture in solid masses like old fibroids, or indeed, in enlargements of any kind where the texture of tissue is extremely dense, is to be avoided as worse than useless, and as capable of doing great harm. If any good can be attained at all by the action of galvanism in these tumors, it will be best attained, I believe, by the plan just described, which is absolutely harmless, painless, and usually beneficial to general health.

It is only where the substance of the mass is partly or wholly fluid that galvano-puncture is permissible, and where its effects are so brilliant in curative result as published records show. In hard tumors, where time is an object, I am of opinion that the knife operation is better than any plan yet proposed; but to many, especially to delicate women of strong nervous temperament, the idea of cutting is so repugnant that they are willing to submit to external electrolysis for



any length of time, provided a favorable result may finally be reached ; and this has been done in at least three cases.

#### FUNCTIONAL DERANGEMENTS\* OF THE BRAIN.

In functional diseases of the brain and spinal cord, such as cerebral or spinal congestion, cerebral or spinal anaemia, and spinal irritability, I think I am speaking within bounds when I assert that the great majority of cases are directly curable by galvanism. It exercises an elective action upon these vascular structures, emptying them of blood when over-charged, and filling them when drained, as the direct or inverse current is used ; it soothes the great nervous irritability attendant upon such derangements ; it relieves promptly the insomnia produced by the same cause, and gives new tone to the enfeebled vaso-motor nerves. Case after case has gone away from a course of electrical treatment, so far restored to health as to allow the patient again to resume the same pernicious habits which led to the primary derangement, until it has become a matter of settled conviction in the minds of specialists that none must be despaired of.

## EFFECT IN DYSMENORRHEA.

In no single disease, however, has the beneficial influence of electricity been made more manifest than in one which appeals to the heart of almost every husband and father, who sees his loved wife or daughter writhing under the recurring pangs of menstrual pain—pain which is nearly as keen as any to which we are subject. Dysmenorrhœa is, I regret to say, fast becoming the rule among American women of all nubile ages, and the female in whom the catamenial flow is regularly and painlessly established, is the rare exception. Nor does this periodically recurring suffering seem materially to affect general health, for they suffer like martyrs and make no sign. Were medical men to consider the immense quantities of stimulants and narcotics monthly consumed from this cause, and could they with confidence replace them with the harmless and ten times more potent remedy, galvanism, I cannot think that they would hesitate. Of more than forty cases, incidentally or directly treated by me for acute dysmenorrhœa during the past winter, not one was unrelieved, and in more than two-thirds of the cases, the pain has not returned. Its rationale I cannot yet explain, but the fact stands, and I refer to my friend Dr. Nichols, of Washington, who has largely used electricity in this derangement,

for corroboration of the statement that it is almost a specific therefor.

Should favorable opportunity arise, I beg that you will put it to the test, using the constant current in such wise that it may traverse the uterus in any direction.

Finally, gentlemen, in this as in all classes of scientific investigation not yet out of swaddling clothes, much indulgence must be granted. That many mistakes should be made before the darkness of ignorance be cleared up, is natural and certain; that much should be to-day asserted as fact which to-morrow's sun proclaims to be fiction, is but to repeat the trite history of all new scientific studies, and that the sanguine love and devotion of men who give their whole lives to one branch of our glorious profession should lead them into many mistakes, is but human. Yet, before the day comes the long twilight, and the broad noon of certainty can only be reached by stumbling through the pitfalls of experiment and trial. And, when the best is done and our end is so far attained as we may reach it, we have but placed in your hands a new weapon with which to fight our common enemy—disease and death—have only made an addition to the armamentarium of the general practitioner which shall add to the lustre of the name of physician through darkened chambers and sick men's hearts.















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